

10/593,053

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
22 September 2005 (22.09.2005)

PCT

(10) International Publication Number
WO 2005/088882 A1

(51) International Patent Classification⁷: **H04J 11/00**

(74) Agents: BRETT, Allan, R. et al.; Smart & Biggar, P.O. Box 2999, Station D, 900 - 55 Metcalfe Street, Ottawa, Ontario K1P 5Y6 (CA).

(21) International Application Number:
PCT/CA2005/000387

(22) International Filing Date: 15 March 2005 (15.03.2005)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
60/553,161 15 March 2004 (15.03.2004) US
60/558,566 2 April 2004 (02.04.2004) US
60/566,009 28 April 2004 (28.04.2004) US

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(71) Applicant (for all designated States except US): NORTEL NETWORKS LIMITED [CA/CA]; 2351 Boulevard Alfred-Nobel, St.Laurent, Quebec H4S 2A9 (CA).

(72) Inventors; and

(75) Inventors/Applicants (for US only): MA, Jianglei [CA/CA]; 3 Bon Echo Crescent, Kanata, Ontario K2M 2W5 (CA). JIA, Ming? [CA/CA]; 345 Whitby Ave, Apt. 302, Ottawa, Ontario K2A 0B3 (CA). TONG, Wen [CA/CA]; 12 Whitestone Drive, Ottawa, Ontario K2C 4A7 (CA). ZHU, Peiying [CA/CA]; 16 Pebble Creek Cres, Kanata, Ontario K2M 2L4 (CA). ROYER, Claude [CA/CA]; 170 Champlain, Gatineau, Quebec J8X 3R2 (CA).

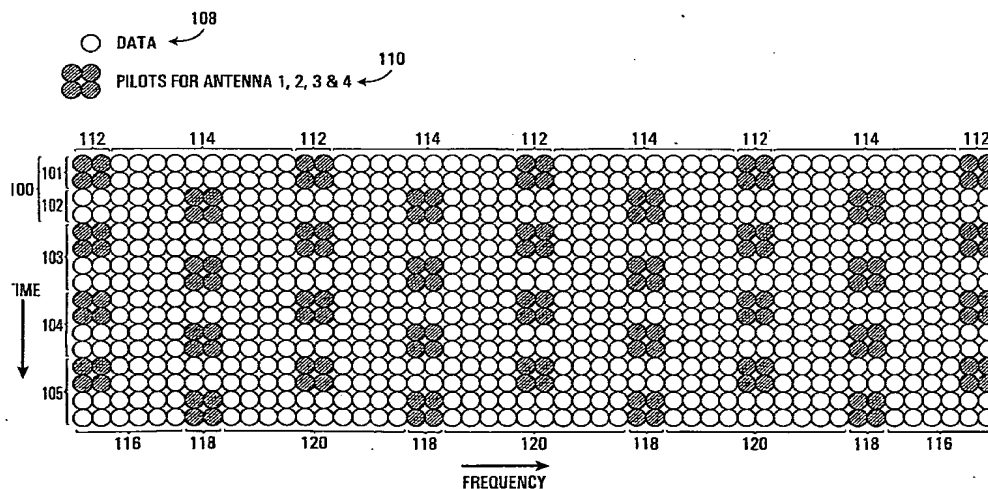
(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

— with international search report

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: PILOT DESIGN FOR OFDM SYSTEMS WITH FOUR TRANSMIT ANTENNAS



(57) Abstract: Pilot, preamble and midamble patterns are provided that are particularly suited for four transmit antenna OFDM systems. Pilots are inserted in a scattered manner for each of the four antennas, either uncoded, space-time coded in pairs, space-time frequency coded in pairs, or space-time-frequency coded.

WO 2005/088882 A1